

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Chain-Stitch Sewing Machine

WE DÜRKOPPWERKE AKTIENGESellschaft,
a German Company of 3 Schillerplatz,
Bielefeld, Germany, do hereby declare the
invention, for which we pray that a patent
may be granted to us, and the method by
which it is to be performed, to be particularly
described in and by the following statement :

This invention relates to a simple chain
stitch sewing machine with hook-shaped
loop-taker and relates to a device holding
the thread loops when forming a stitch,
which device co-operates with the loop-taker
in order to form a satisfactory thread triangle
for the certain penetration of the
sewing needle.

A simple chain stitch sewing machine with
hooked shaped loop-taker which describes
a somewhat elliptical to-and-fro movement
around the sewing needle is known, which
for the supporting of the formation of the
so-called thread triangle for the penetration
of the sewing needle make use of the thread
loops taken up by the loop-taker. The
effective parts of this means either them-
selves carry out a movement or they are
located non-movably on the parts of a
sewing machine in order to be made
effective by the movement of the loop-taker.

The apex of the thread triangle to be
formed lies directly under the sewn material
when forming the stitch and the base of the
so-called triangle lies around the loop-taker
blade in the area in which the sewing needle
tip must penetrate. The known means uses
for the corresponding offering of the thread
loop a thread arm running from the apex
to the base of the thread triangle, which lie
between the underside of the stitch plate
and the upper side of the loop-taker blade.

When sharp curves, corners or different
lengths of stitch are to be sewn, the position
of the apex of the thread triangle differs and
consequently also that of its arms. It there-

fore occurs that the said means cannot
influence the thread loop in the correct
manner and consequently faulty stitches or
other faults occur.

Irrespective of where the apex of the
thread triangle is on the underside of the
sewn material, the thread loop has its loop
base firmly around the loop-taker blade.
Proceeding from this it is proposed accord-
ing to the present invention to work in the
loop-taker blade laterally, a longitudinal
groove in which during the return movement
of the loop-taker, away from the sewing
needle, a finger located non-movably on the
machint and adjustabe relatively to this
longitudinal groove engages. Thereby it is
ascertained that the thread loop, with the
aid of the movement of the loop-taker in
the direction of the minor axis of its
elliptical path, is suspended securely from
the thread controlling finger independently
of the position of the apex of the thread
triangle, whereby a satisfactory presentation
of the thread triangle in every sewing
position is ensured.

One embodiment of the invention is
illustrated in the accompanying drawings, in
which :—

Fig. 1 is a part-sectional front view of
parts of a simple chain stitch sewing
machine according to the invention ;

Fig. 2 is a side or end view of the
mechanism shown in Fig. 1 ;

Fig. 3 is a plan of the said finger and
its adjusting device ; and

Figs. 4-8 show phases of the stitch-forming
procedure with the apparatus according to
the invention.

In a chain-stitch sewing machine with a
base plate 1 and an arm 2 there are, as in
known construction, the drive for the move-
ment of a sewing needle 3 and of a loop
taker moved in an elliptical path. The two

[Price 4s. 6d.]

sewing tools 3 and 4 co-operate with each other and with other means usual in a simple chain-stitch sewing machine of this kind, such as the needle plate 5, the work advancing device 6, thread-tensioning means (not shown) and a so-called loop holding apparatus. The loop holding apparatus consists of a stationary finger 7 (Figs. 2 and 3) with a tip 8 which is so adjusted in the path of the loop-taker 4 that, upon the return movement of the loop-taker it enters into a groove 9 (see Fig. 2) on the front side 4' of the loop-taker blade. Finger 7, in the example illustrated, is fixed with fixing screws 10 on the underside of the base plate 1 of the machine.

For the horizontal setting of the tip 8 in the path of the loop-taker 4, the passage holes 11 in the fixing strip 13 (Fig. 1) for the fixing screws 10 are so large that the finger 7 can be adjusted to position before the final approach of the fixing screw 10, with the tip 8 directed in the necessary position relatively to the path of the loop-taker. For the vertical setting of the tip 8, namely for the adapting it to the height adjustment of the loop-taker relatively to the distance from the underside of the needle plate 5, that is its position relatively to the width of the groove 9 in the loop-taker 4, the fixing strip 13 of the finger 7 which carries tip 8 is formed resilient with a bias towards the needle. An adjusting screw 12 is screwed in the part 13 of the finger 7 and bears against the underside of the base plate 1. Rotation of this screw effects the necessary adjustment of the tip 8 widthwise of the groove 9, and the adjustment can be fixed by the lock-nut shown.

Furthermore, known means are provided for the loop-taker 4 which guide the thread loop so that it is taken up in the manner necessary for the stitch formation. For this purpose, on the underside of the loop-taker blade a recess 14 (Fig. 4) is provided which presents two end edges or shoulders 15 and 16. The edge 15, in the vicinity of the apex of the loop-taker blade, is provided in order to hold the thread loop for a time before the drawing-off of the tip 8 out of the groove 9, during which time the descending sewing needle 3 enters the triangle of thread thus formed. The other edge 16 of the recess 14, adjacent the foot or stem of the loop-taker blade 4, serves to allow the thread loop to slide only so far on the loop-taker blade, being thereafter taken along with the further movement of the loop-taker 4.

The manner of operation of the improved apparatus for forming a simple chain stitch, is as follows:—

When before the commencement of the stitch formation the sewing needle 3 (Fig. 4) goes upwards from its lower dead point position it throws its thread loop out in

known manner. The loop-taker 4 which about the same time has begun its elliptical path and passes outside of the sewing needle 3, enters the loop and takes it so that the loop slides along the loop-taker as far as the edge 16. The loop base is then taken along by the said edge 16 of the loop-taker 4 for a distance such that it lies on the end of the loop-catching side path, as shown in Fig. 6, before the tip 8 of the finger 7. Due to the swinging of the loop-taker 4 into its needle-avoiding side path, the tip 8 of the stationary finger 7 enters the groove 9 of the loop-taker. On further backward movement of the loop-taker 4 the loop base remains on the one hand held by the tip 8 whilst on the other hand it is engaged by the edge 15 and taken along by the returning loop-taker 4 and consequently is shaped and tensioned as shown in Fig. 7.

Thereby a thread triangle 17 is held in a form always at the stitching zone for the sewing needle 3 to enter on its next downward movement. The thread is held as a pre-formed horizontal loop which cannot deflect from the needle tip even when stitching sharp curves corners and with stitches of different size. Towards the end of the stitch-forming cycle, the tip 8 of the finger 7 rides away from the range of the groove 9 because of the changing of the loop-taker 4 into its other path, so that the thread loop is no longer held by it and must be thrown off in known manner from the loop-taker tip.

WHAT WE CLAIM IS:—

1. Simple chain stitch sewing machine, with a loop-taker hook describing a somewhat elliptical path of movement, pivoting around its axis, characterised in that in the loop-taker blade taking the needle loop laterally a longitudinal groove or a corresponding recess is worked, in which during the return movement of the loop-taker away from the needle, a stationary finger located on the machine engages with its tip.

2. Simple chain stitch sewing machine according to claim 1, characterised in that the said tip of the stationary finger is adjustable in vertical direction for adapting its height to the height adjustment of the loop-taker.

3. Chain stitch sewing machine in which, below the sewn work a substantially horizontal thread triangle is formed the base of which is held between a shoulder on the underside of the loop-taker hook and a fixed finger which at that phase of the stitch-forming cycle has its tip riding in a groove in the adjacent side face of the loop-taker hook.

4. Chain stitch sewing machine having thread loop forming means constructed and adapted to operate substantially as the example herein described with reference to

and as illustrated in the accompanying drawing.

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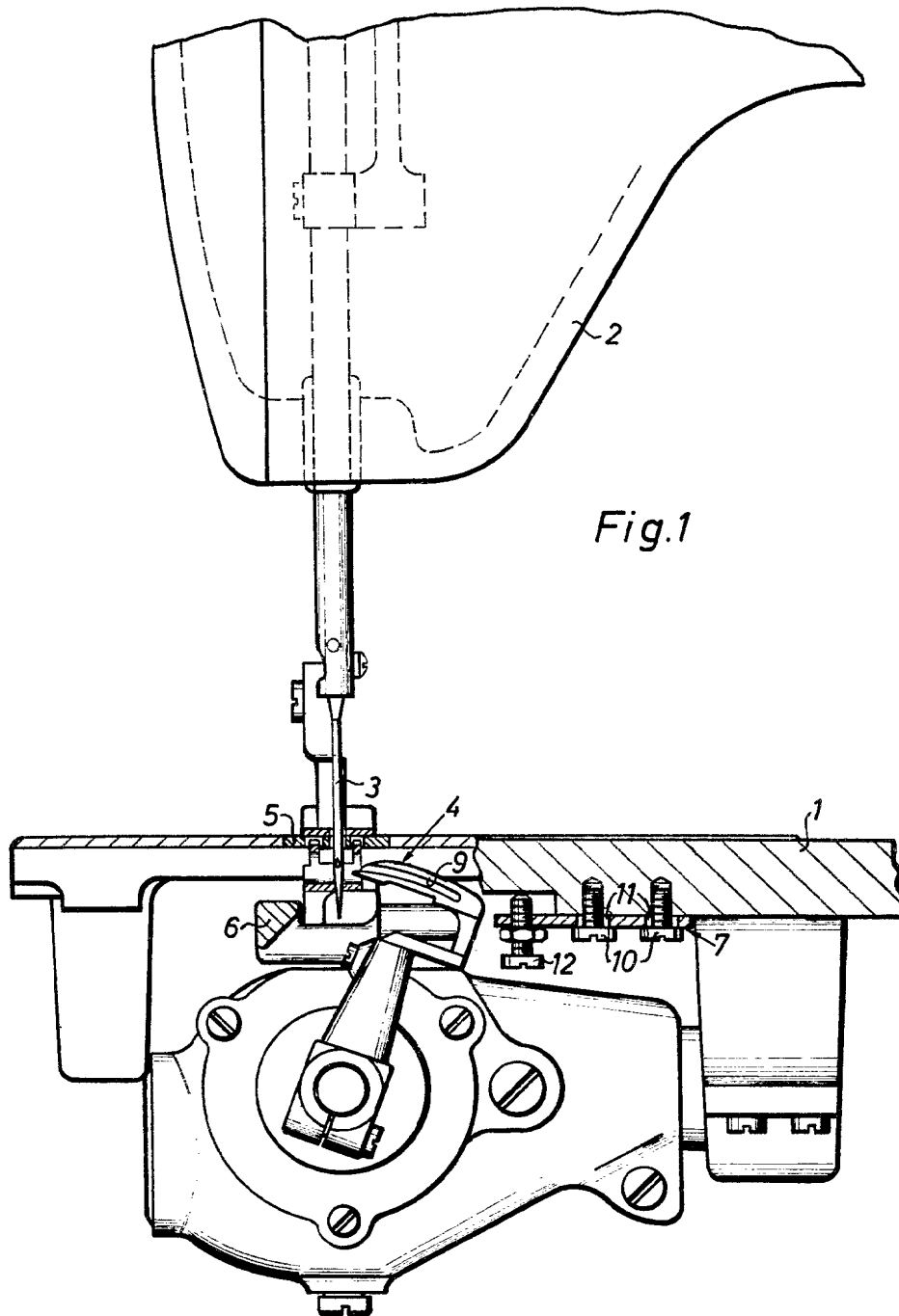


Fig.2

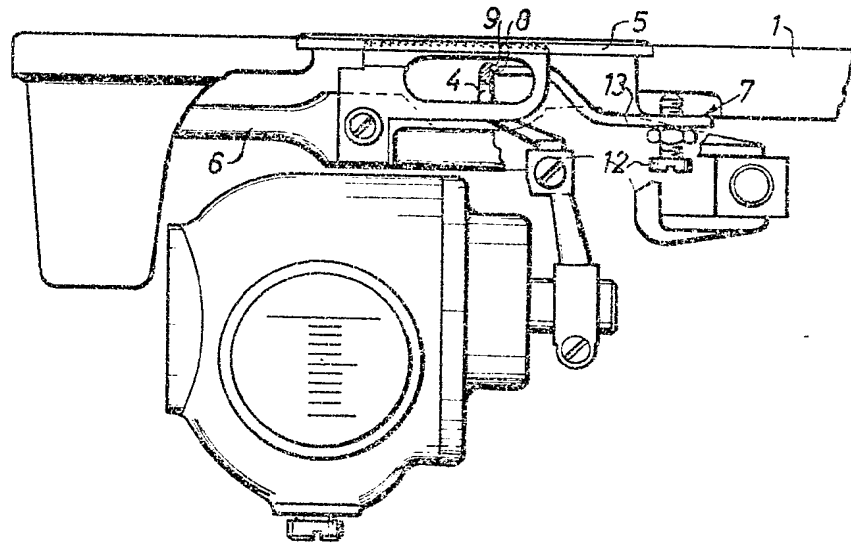
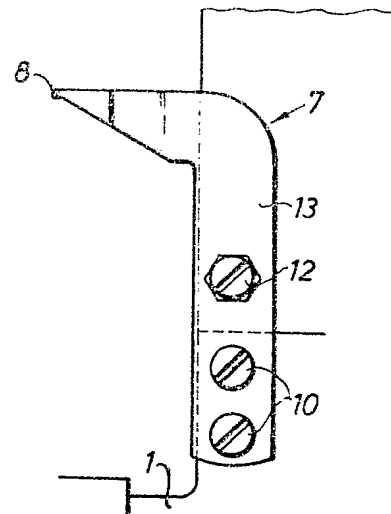


Fig.3



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3 SHEETS

This drawing is a reproduction of
the Original on a reduced scale.

SHEETS 2 & 3

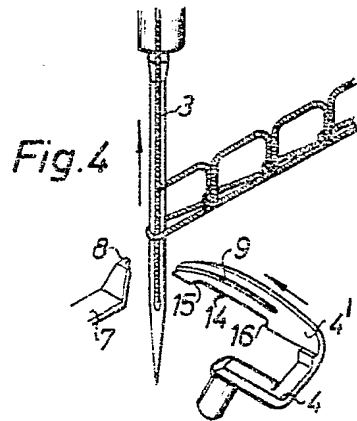


Fig. 5

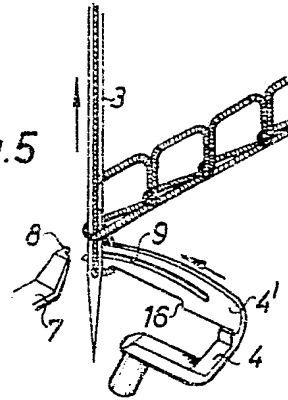


Fig. 6

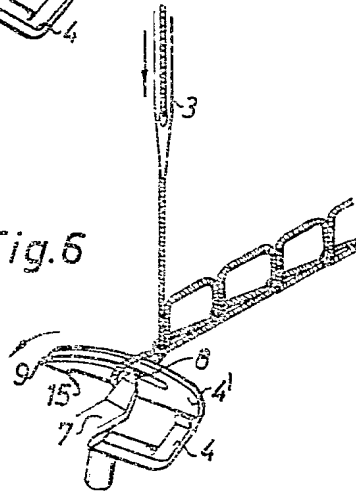


Fig. 7

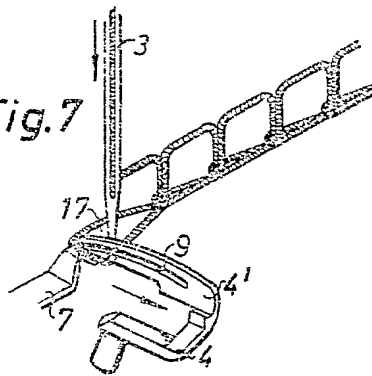


Fig. 8

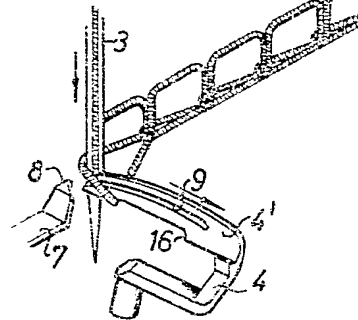


Fig. 2

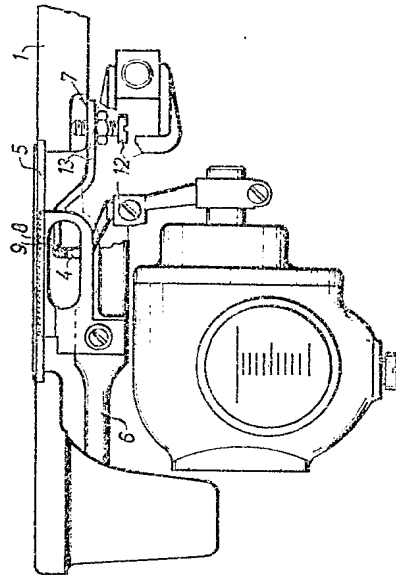


Fig. 3

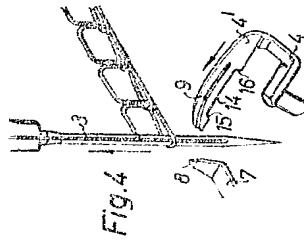
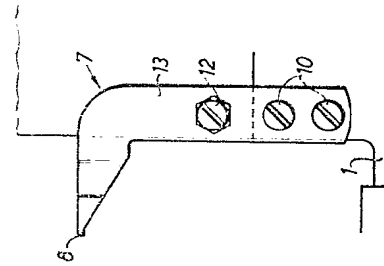


Fig. 5

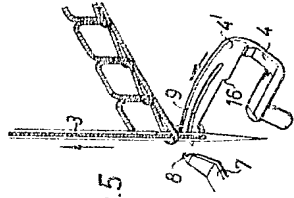


Fig. 6

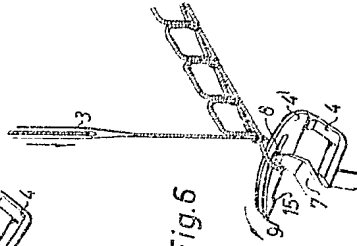


Fig. 7

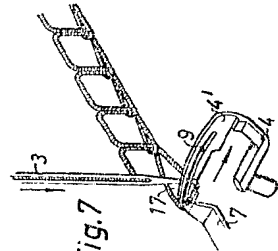


Fig. 8

